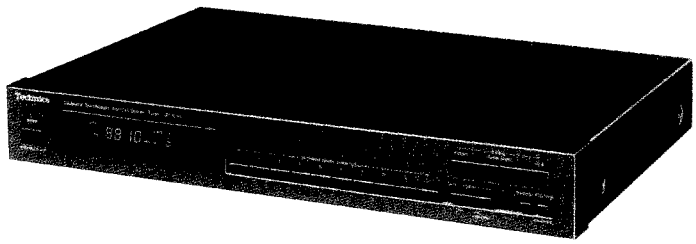
ORDER NO. AD9006162C7

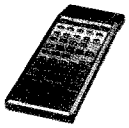
Service Manual

Tuner

QUARTZ Synthesizer
AM/FM Stereo Tuner

ST-K50





Color

(K) ..... Black Type

Area

Country Code	Areas	Color
(GC)	Asia, Latin America, Middle Near East and Africa	(K)
(GN)	Oceania	
(PX)	Far East-PX	

SPECIFICATIONS

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz (0.05 MHz steps)
Sensitivity	1.5 µV (IHF, usable)
S/N 30 dB	1.3 µV (75 Ω)
S/N 26 dB	1.2 µV (75 Ω)
S/N 20 dB	0.9 µV (75 Ω)
IHF 46 dB stereo quieting sensitivity	28 µV/75 Ω
Total harmonic distortion	
MONO	0.15 %
STEREO	0.3 %
S/N	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~−1.5 dB
Alternate channel selectivity	
±400 kHz	55 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	45 dB
IF rejection at 98 MHz	90 dB
Spurious response rejection at 98 MHz	75 dB
AM suppression	50 dB
Stereo separation	
1 kHz	40 dB
10 kHz	30 dB
Carrier leak	
19 kHz	−30 dB (−35 dB, IHF)
38 kHz	−45 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.5 dB
Limiting point	1.2 µV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75 Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	531 kHz~1602 kHz (9-kHz steps) 530 kHz~1600 kHz (10-kHz steps)
Sensitivity (S/N 20 dB)	20 µV, 300 µV/m
Selectivity (±9 kHz) (at 999 kHz)	50 dB
Image rejection (at 999 kHz)	40 dB
IF rejection (at 999 kHz)	60 dB

■ GENERAL

Output voltage	0.3 V (0.6 V IHF)
Power consumption	9 W
Power supply	
For Oceania:	AC 50 Hz/60 Hz, 240V
For others:	AC 50 Hz/60 Hz, 110 V/127 V/220 V/240 V
Dimensions (W × H × D)	430 × 64 × 290 mm (16-15/16" × 2-17/32" × 11-13/32")
Weight	2.3kg (5.1 lb.)

Notes:

1. Specifications are subject to change without notice.
2. Weight and dimensions are approximate.
3. Total harmonic distortion is measured by the digital spectrum analyzer.

Technics

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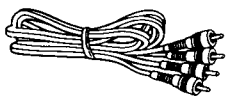
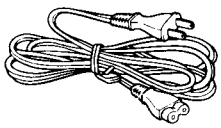
■ ACCESSORIES

- Stereo connection cable 1
  (SJP2249-3)

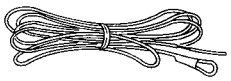


- AC power supply cord 1
  (SJA173)...For (GN) area only.
  (RJA0004)...For others.

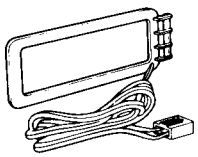


- AM antenna holder 1
  (SMA233-1M)

- FM indoor antenna 1
  (SSA272M)



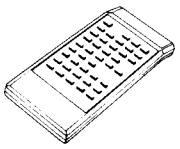
- AM loop antenna 1
  (SPB1163T)



- Batteries 2
  (R03)

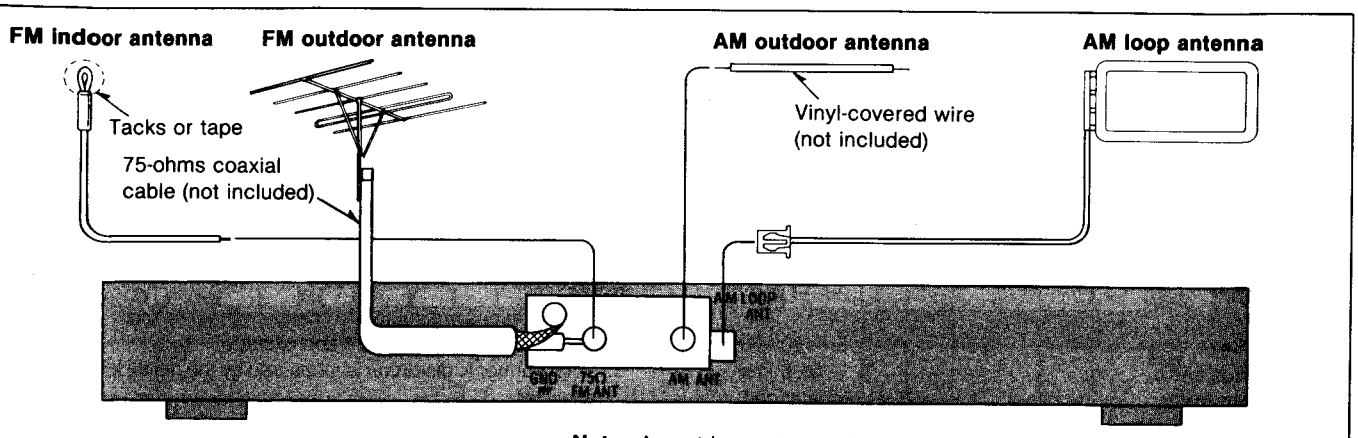
- Screws 2
  (XTN3+10AFZ)

- Remote-control transmitter 1
  (EUR64747)...For (GN) area only.
  (EUR64746)...For others.



- AC attachment plug 1
  (SJP9215)...For (GC), (PX) areas.

■ CONNECTIONS



Note: An outdoor antenna should be installed by a qualified technician only.

FM antenna

■FM indoor antenna (included)

Attach to a wall (using tack or tape) facing in the direction of best reception.

For best reception sound quality:

An FM outdoor antenna is recommended.

Notes:

- The tack should not contact the internal antenna wire.
- Disconnect this antenna if an FM outdoor antenna is installed.

■FM outdoor antenna (not included)

If the FM indoor antenna does not provide satisfactory reception of FM broadcasts, an outdoor antenna should be used.

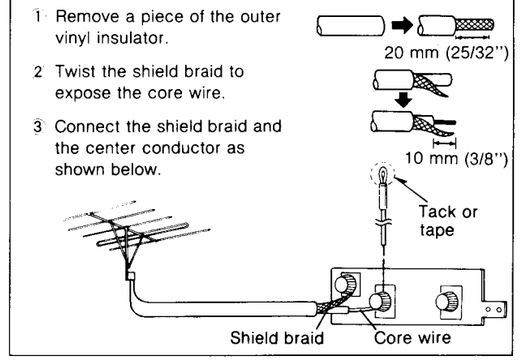
The outdoor antenna may be required in a mountainous region, or if this unit is located inside a reinforced-concrete building, etc.

How to connect a 75-ohms coaxial cable

1 Remove a piece of the outer vinyl insulator.

2 Twist the shield braid to expose the core wire.

3 Connect the shield braid and the center conductor as shown below.



AM antenna

■AM loop antenna (included)

Connect the AM loop antenna to the AM antenna terminals, and attach it to a column, rack or this unit (facing in the direction of best reception).

Notes:

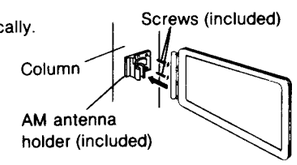
- If this antenna is not properly installed, AM broadcasts will not be received.
- Be sure to connect the AM loop antenna even when an outdoor antenna is used.

Pay attention to the following points when attaching the antenna.

- Do not attach it horizontally (to do so would impair reception).
- Do not attach it close to power cords, speaker wires or metal surfaces (to do so would result in noise).
- Do not attach it close to a tape deck (when the tape deck is being used, chirping or beeping sounds may be received).

When attaching the antenna to a column, a wall or rack

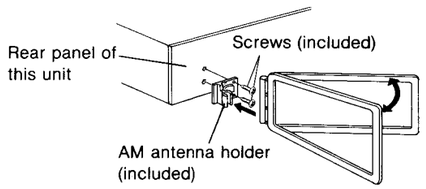
Affix it vertically.



When attaching the antenna to the unit

This type of installation may cause impaired reception or result in signal noise. If possible, attach the antenna to a rack, a wall, or a column.

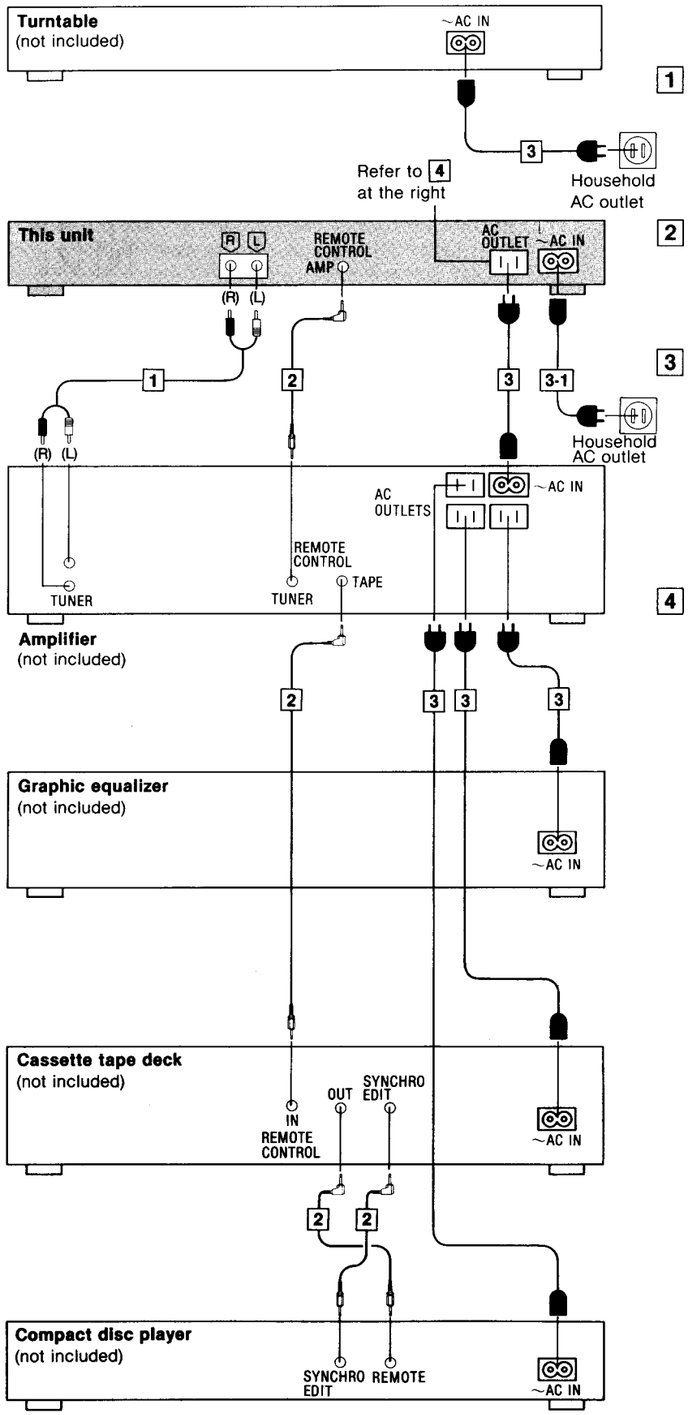
Move the antenna toward the right or left to find the point of best reception.



■AM outdoor antenna (not included)

The outdoor antenna may be required in a mountainous region, or if this unit is located inside a reinforced-concrete building, etc. Use 5 – 12 m (16 – 40 ft.) of vinyl-covered wire horizontally at the window.

Make connections in the numbered sequence by using the included cables and power cord.



Make connections as described below for remote-control operation. For information concerning the stereo connection cables of each unit, refer to that unit.

1 Connect the stereo connection cable (included).

2 Connect the L-type cables (not included).

3 Connect the AC power supply cords.

3-1 Connect the AC power supply cord (included).

Connect this cord only after all other cables have been connected.

4 "AC OUTLET"

"SWITCHED" outlet

Power is controlled by the power switch.

This outlet is only for use with other audio equipment.

Also, do not exceed the indicated power rating when connecting to this outlet.

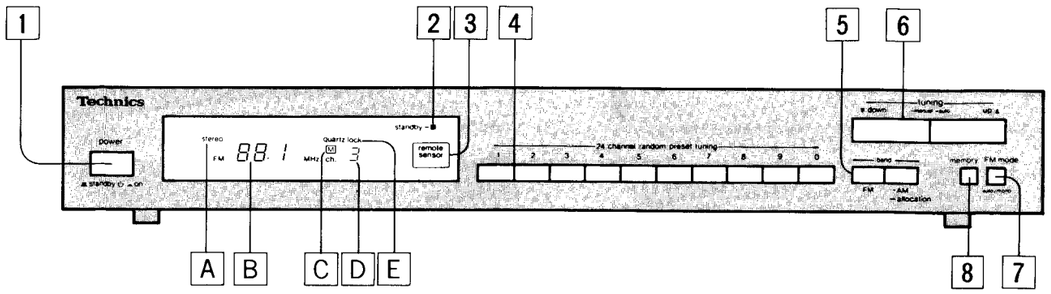
Note:

When this unit is used with the Technics amplifier model SU-G50, the power indication becomes "500 W MAX", becoming lower than the amplifier's power consumption indication.

This is because the power consumption (510 W for the SU-G50) indicated on the nameplate, per IEC 65 standards, determines the power indication during maximum available output power.

There is no problem in this respect for home use, because the amplifier's power consumption is 290 W or less.

■ LOCATION OF CONTROLS



Control section

1 Power "standby ⏻/on" switch (power/■ standby ⏻ ▂ on)

This switch switches ON and OFF the secondary circuit power only. The unit is in the "standby" condition when this switch is set to the standby ⏻ position. Regardless of the switch setting, the primary circuit is always "live" as long as the power cord is connected to an electrical outlet.

2 "standby" indicator (standby)

This indicator illuminates when the power switch of this unit or that of the remote control is switched "OFF". Its purpose is to alert the user of the constant supply voltage to the internal circuitry even with the power switch OFF.

3 Remote-control signal receptor (remote sensor)

4 Preset-tuning buttons (1 – 0) (24 channel random preset tuning)

These buttons are used to preset FM and AM broadcast frequencies into the memory of this unit, and are also pressed to recall the desired preset stations.

5 Band selectors (band)

FM:
Press this button to listen to an FM broadcast.
AM:
Press this button to listen to an AM broadcast.
allocation:
When the AM button is pressed for about 4 seconds, the AM frequency step will change to 10 kHz per step.
(This unit is set to 9 kHz before shipment.)
In order to return to the original frequency indications, press this button for about 4 seconds again.

6 Tuning buttons (tuning)

These buttons can be used for tuning to the desired broadcast station. If the button is pressed momentarily and then released, the frequency will change at intervals of 0.05 MHz for FM and 9 kHz (or 10 kHz) for AM.

7 FM mode selector (FM mode)

This unit automatically switches to the stereo mode when an FM stereo broadcast is received. This selector is used to select the mode (stereo or monaural) of FM broadcast signals.

8 Memory button (memory)

This button can be used when presetting broadcast station frequencies to the memory.

Display section

A FM stereo indicator (stereo)

This indicator automatically illuminates when an FM stereo broadcast is being received.
It will not illuminate if the FM mode selector is set to the monaural mode.

B Digital frequency display

C Memory indicator (M)

This indicator illuminates when the memory button is pressed.

D Channel display

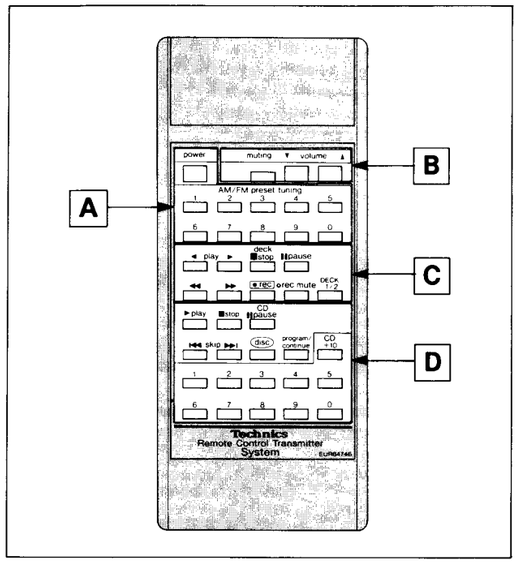
This display shows the channel number selected by one of the preset-tuning buttons.

E Quartz-lock indicator (quartz lock)

This indicator illuminates when the unit is tuned precisely to a broadcast station.

■ REMOTE CONTROL OPERATION

- This remote-control transmitter can be used for control of a Technics amplifier with a control terminal, as well as a cassette tape deck, turntable, compact disc player, or a graphic equalizer with a remote-control terminal. Consult your dealer for details.
- For detailed information concerning operation steps, etc., please refer to the appropriate page for each unit and the respective operating instructions. For this system, you can listen to tapes or compact discs, etc., by operating the remote-control transmitter without using the amplifier's input selectors. (Refer to the Technics amplifier's operating instructions.)



A Tuner keys

power — Press this key to switch the tuner ON or to the stand-by condition.
Note that there is no need to press this key if the tuner's power is ON. (If it is pressed, the tuner will be switched to the stand-by mode.)

1 – 0 — Press this key to select the desired preset channel.

B Amplifier keys

muting — Press this key to temporarily reduce the volume level.
The volume level is attenuated by 20 dB (approx. 1/10).
Press once again to return to the previous volume level.

▼volume▲ — Press this key to adjust the volume level.

C Cassette tape deck keys

DECK 1·2 — Press this key to select the deck (tape deck 1 or tape deck 2) to be used.

◄play / play► — ▶: For the "A"-side of the tape
◀: For the "B"-side of the tape
Press one of these keys to begin the playback or recording, pressing the key corresponding to the side of the tape to be played (or recorded).

Note: Depending on which Technics tape deck is used in combination with this unit, tape deck 1 might be the "A"-side playback-only type.

deck ■stop — Press this key to stop tape movement.

◀◀ / ▶▶ — Press this key to advance or rewind the tape while the unit is in the stop mode.
Press this key to select the desired tune while the unit is in the play mode.
(Only applicable to a Technics tape deck with the "music select" functions.)

orec mute — Press this key to make a silent interval during recording.
(After 4 seconds, the tape deck will automatically change to the recording stand-by mode.)
To start the recording again, press the playback key.

❚❚pause — Press this key to temporarily stop playback or recording.
Press the playback key to resume the play or recording.

●rec — Press this key to change to the recording stand-by mode.

Note
Depending on which Technics tape deck is used in combination with this unit, it might be that record-muting, pause of the playback (and the recording), and the recording functions of tape deck 1 not be possible by using the remote-control transmitter.

D Compact disc player keys

►play — Press this key to start the play.

■stop — Press this key to stop play.

CD ❚❚pause — Press to stop disc play temporarily.
Press the playback key to start the disc play.

⏮skip / skip⏭ — Press one of these buttons briefly to move the pick-up to the beginning of a specific track.

disc — If a Technics multi compact-disc player is used in combination with this unit, the disc to be played can be selected by first pressing this button and then pressing the appropriate "numeric button".

program/ continue — Press to select the desired play mode.
("program" or "continue")

1 ~ CD +10 — These buttons can be used to select track number.

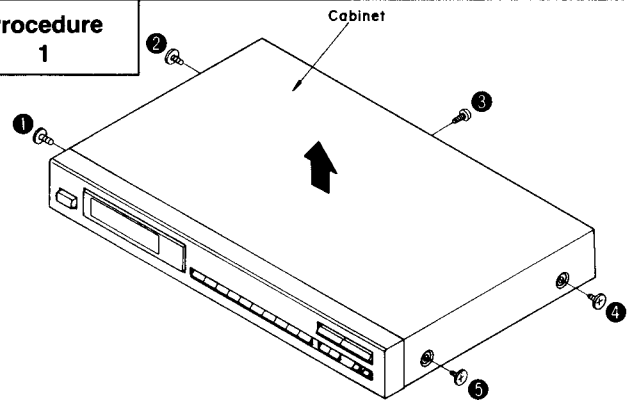
Note:
To select a track numberd 10 or higher in the direct access play or program play mode, first press the "+10" button the necessary number of times and then press the appropriate "numeric button".

■ DISASSEMBLY INSTRUCTIONS

"ATTENTION SERVICER"
Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	Removal of the Cabinet

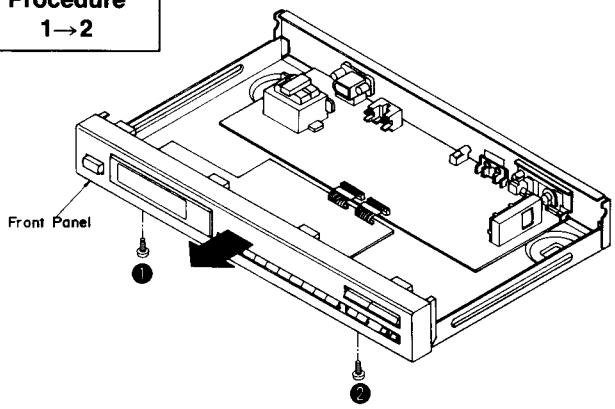
Procedure 1



●Remove the 5 screws (❶~❺).

Ref. No. 2	Removal of the Front Panel

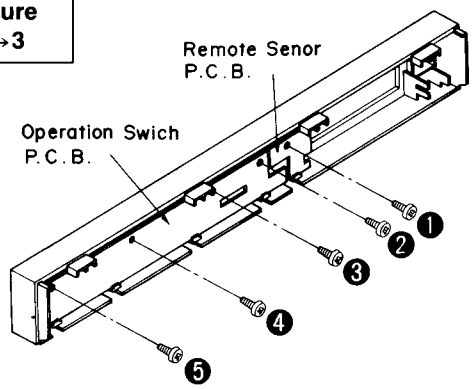
Procedure 1→2



1. Remove the 2 screws (❶, ❷).
2. Remove the front panel in the direction of the arrow.

Ref. No. 3	Removal of the Operation switch P.C.B. and Remote Sensor P.C.B.

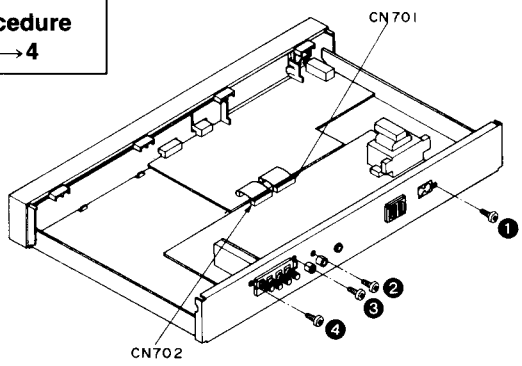
Procedure 1→2→3



■ **Remote Sensor P.C.B.**
●Remove the 1 screw (❶).
■ **Operation Switch P.C.B.**
●Remove the 4 screws (❷~❺).

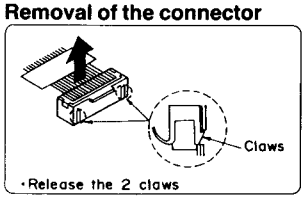
Ref. No. 4	Removal of the Main P.C.B.

Procedure 1→4



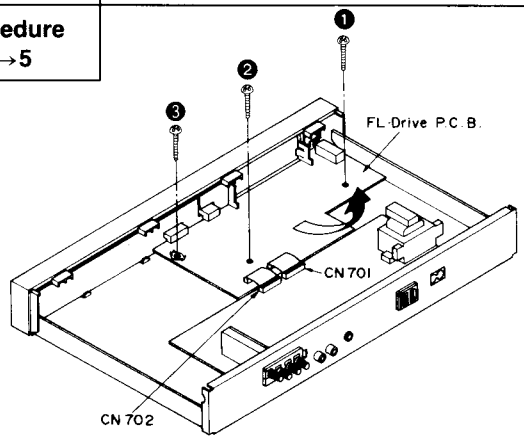
1. Remove the 2 connector (CN701, CN702).
2. Remove the 4 screws (❶~❹).

Removal of the connector

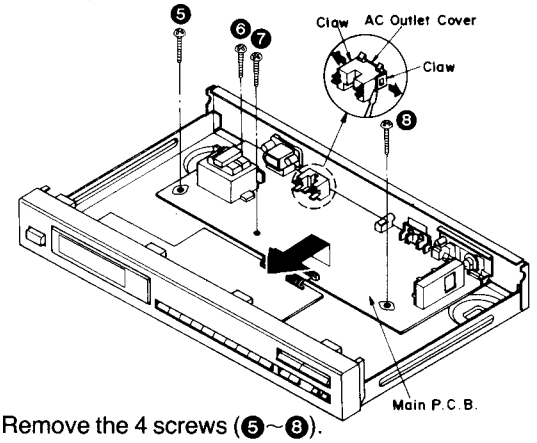


Ref. No. 5	Removal of the FL Drive P.C.B.

Procedure 1→5



1. Remove the 2 connector (CN701, CN702).
2. Remove the 3 screws (❶~❸).
3. Remove the FL drive P.C.B. in the direction of the arrow.



3. Remove the 4 screws (❺~❽).
4. Release the 2 claws of AC outlet cover.
5. Remove the main P.C.B. in the direction of the arrow.

■ MEASUREMENTS AND ADJUSTMENTS

FM ADJUSTMENT

Control positions and equipment used

- FM signal generator(FM-SG)
- Stereo modulator
- Distortion analyser
- DC electronic voltmeter(EVM)
- Frequency counter
- Choke coil(100μH)
- Resistor(100kΩ)

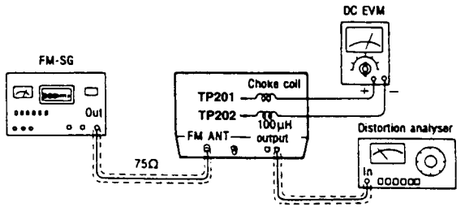
Note: For Z201 (AM ANT and OSC coil), Z202 (AM-IFT), they are supplied as adjusted parts. So, do not turn the cores of the parts. It is not necessary to adjust the AM circuit.

FM MONO DISTORTION ADJUSTMENT

1.Test equipment connection is shown in figure.
2.Set the unit to **"FM"** mode.
3.Set the radio frequency display and signal generator to **100.10MHz**.
4.Adjust the core of **T201** so that the voltage measured in signal mode is **0mV(0±20mV)** in 300mV range.
5.Adjust **T202** so that the distortion factor of L-CH is minimized.
6.Repeat steps 4 and 5.
7.Make sure that the distortion factors of L-CH and R-CH are nearly the same and minimum.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
Modulation 100%
Modulation frequency 1kHz
Output level.....66dB



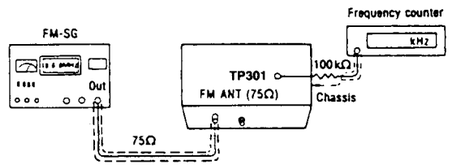
MPX VCO ADJUSTMENT

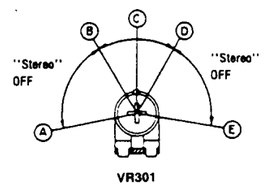
1.Test equipment connection is shown in figure.
2.Set the unit to **"auto"** position.
3.Set the radio frequency display and signal genarator to **100.10MHz**.
4.Adjust **VR301** for **19kHz±30Hz** on frequency counter reading.

USING ALTERNATE SYSTEM

1.Receive the stereo broadcast.
2.Adjust **VR301** until stereo indicator lights up. Fix the arm of **VR301** as shown in figure.

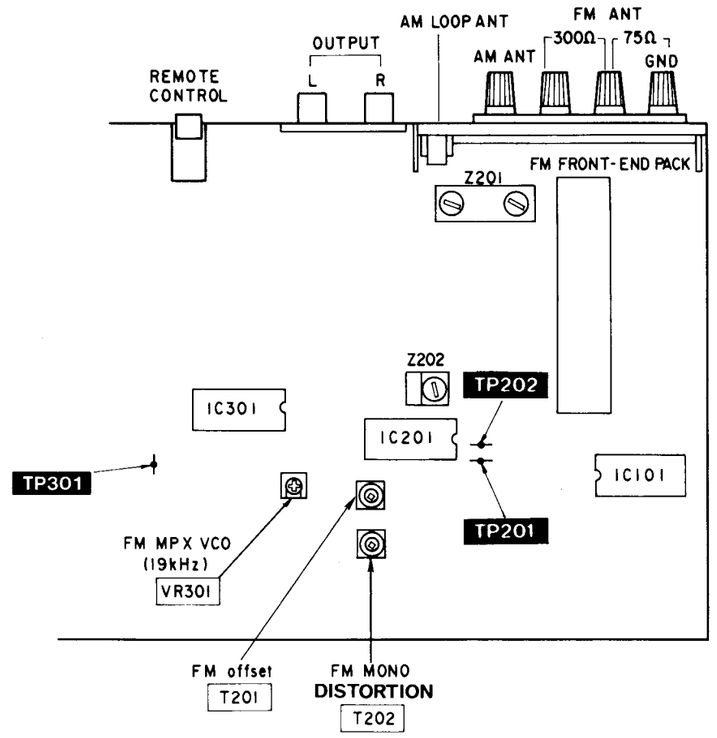
FM SIGNAL GENERATOR CONDITION
Modulation ..... 0% (non-modulation)
Output level.....66dB





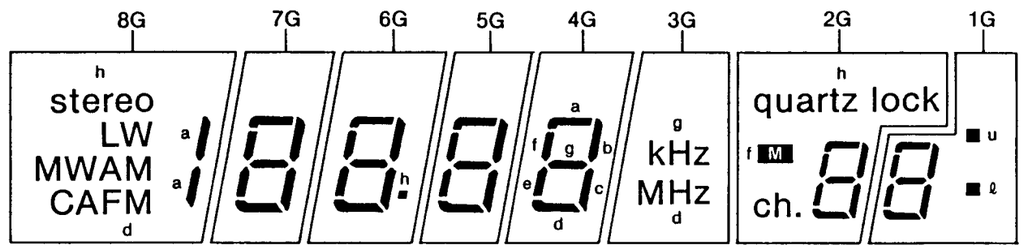
Ⓐ−Ⓑ,
Ⓓ−Ⓔ..... "Stereo" OFF position
Ⓑ−Ⓓ..... "Stereo" ON position (Indicator lighting)
Ⓒ..... Adjust point of pilot circuit

•ADJUSTMENT POINTS



■ DESCRIPTION OF FL PANEL [FL901 (SAD8MT10ZYK)]

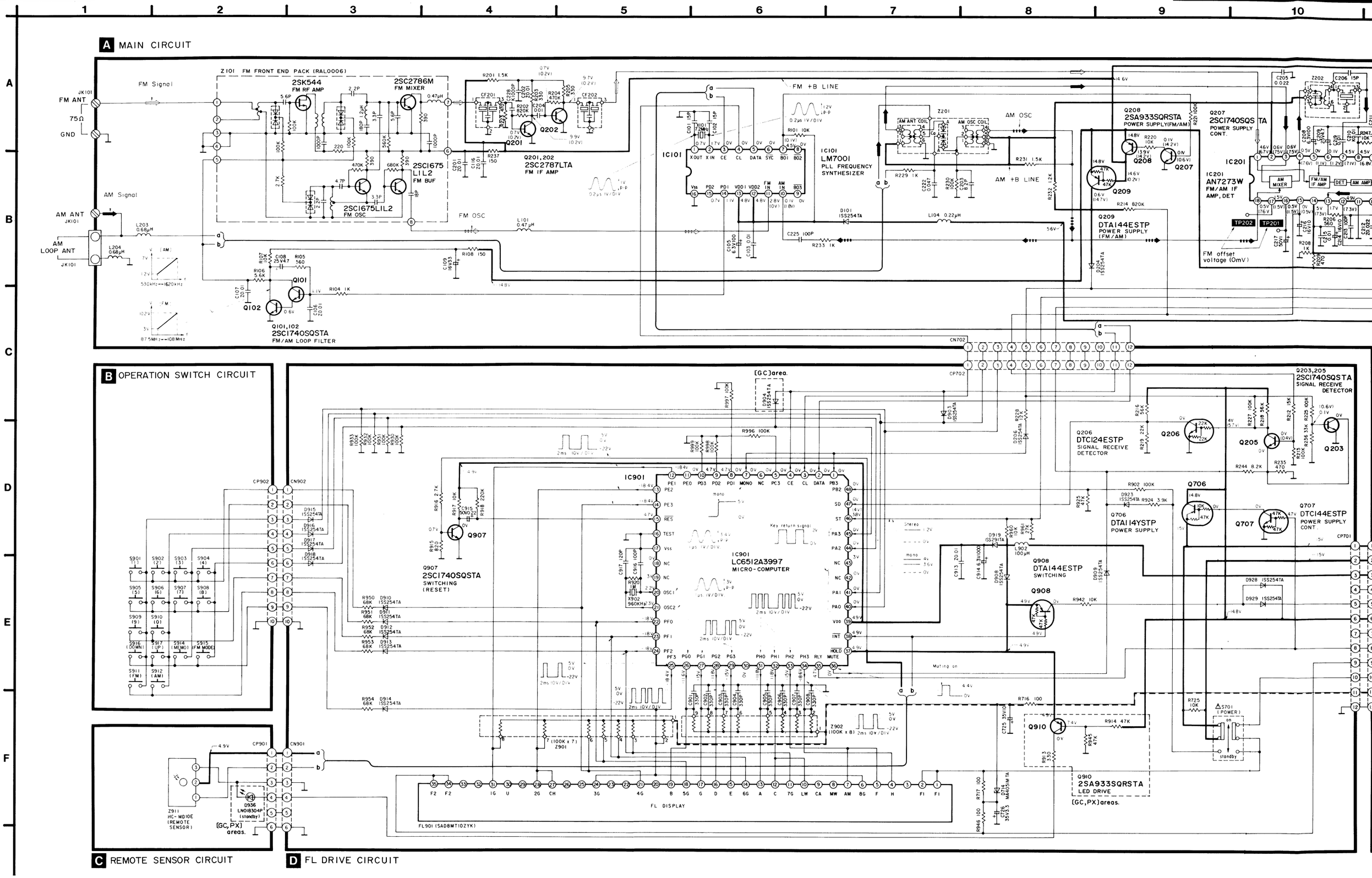
• GRID ASSIGNMENT



Note: The grid of 3G and 8G are used for external connection.

• PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CONNECTION	F1	F1	NP	h	f	8G	AM	MW	CA	LW	7G	c	a	6G	e	d	g	5G
PIN NO.	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
CONNECTION	b	NP	4G	NP	NP	3G	NP	NP	ch	2G	NP	u	1G	ℓ	NP	F2	F2	


A MAIN CIRCUIT
B OPERATION SWITCH CIRCUIT
C REMOTE SENSOR CIRCUIT
D FL DRIVE CIRCUIT
Z101 FM FRONT END PACK (RAL0006)
2SK544 FM RF AMP
2SC2786M FM MIXER
2SCI675 LIL2 FM BUF
2SCI675LIL2 FM OSC
Q201,202 2SC2787LTA FM IF AMP
Q201
Q202
Q101
Q102
Q101,102 2SCI740SQSTA FM/AM LOOP FILTER
IC101 LM7001 PLL FREQUENCY SYNTHESIZER
FM +B LINE
AM +B LINE
AM OSC
FM OSC
FM Signal
AM Signal
FM ANT JK101
75Ω
GND
AM ANT JK101
AM LOOP ANT JK101
L203 0.68μH
L204 0.68μH
L101 0.47μH
L104 0.22μH
D101 ISS254TA
D204 ISS254TA
Q208 2SA933SQRSTA POWER SUPPLY(FM/AM)
Q209 DTA144ESTP POWER SUPPLY (FM/AM)
Q207 2SCI740SQSTA POWER SUPPLY CONT.
IC201 AN7273W FM/AM IF AMP, DET
FM/AM IF AMP
AM MIXER
DET
AM AMP
TP202
TP201
FM offset voltage (0mV)
CN702
CP702
Q203,205 2SCI740SQSTA SIGNAL RECEIVE DETECTOR
Q206 DTCI24ESTP SIGNAL RECEIVE DETECTOR
Q205
Q203
Q706 DTA114YSTP POWER SUPPLY
Q706
Q707 DTCI44ESTP POWER SUPPLY CONT.
Q707
Q908 DTA144ESTP SWITCHING
Q908
Q910 2SA933SQRSTA LED DRIVE
Q910
[GC,PX]areas.
IC901 LC6512A3997 MICRO-COMPUTER
Q907 2SCI740SQSTA SWITCHING (RESET)
Q907
X902 960KHz
Z902 (100K x 8)
Z901 (100K x 7)
FL DISPLAY
FL901 (SAD8MT10ZYK)
CP902
CN902
CP901
CN901
S901 (1) S902 (2) S903 (3) S904 (4)
S905 (5) S906 (6) S907 (7) S908 (8)
S909 (9) S910 (0)
S916 (DOWN) S917 (UP) S914 (MEMO) S915 (FM MODE)
S911 (FM) S912 (AM)
Z911 HC-MD10E (REMOTE SENSOR)
D936 LN018304P (standby)
S701 (POWER)
standby
Muting on
FM Stereo
FM mono
Key return signal
530kHz←→1620kHz
87.5MHz←→108MHz
CF201
CF202
X101 12MHz

5 6 7 8 9 10 11 12 13 14

IC101 LM7001 PLL FREQUENCY SYNTHESIZER

IC201 AN7273W FM/AM IF AMP, DET

IC301 AN7470 FM MPX

Q208 2SA933SQRSTA POWER SUPPLY(FM/AM)

Q207 2SC1740SQSTA POWER SUPPLY CONT.

Q209 DTA144ESTP POWER SUPPLY (FM/AM)

Q212 2SC1740SQSTA FM mono distortion adj. BUFFER AMP

Q301, 302 2SC3311AQSTA MUTING

Q303 2SA933SQRSTA MUTING CONT.

Q206 DTC124ESTP SIGNAL RECEIVE DETECTOR

Q203,205 2SC1740SQSTA SIGNAL RECEIVE DETECTOR

Q706 DTA114YSTP POWER SUPPLY

Q707 DTC144ESTP POWER SUPPLY CONT.

Q908 DTA144ESTP SWITCHING

Q909 2SC1740SQSTA SWITCHING (REMOTE)

Q910 2SA933SQRSTA LED DRIVE

Q701 2SC3940AQSTA REGULATOR

Q709 2SC1740SQSTA RELAY DRIVE

Q702 2SC1740SQSTA REGULATOR

IC901 LC65I2A3997 MICRO-COMPUTER

FM +B LINE

AM +B LINE

AM OSC

FM offset voltage (0mV)

FM offset voltage (0mV) adj.

FM MPX VCO adj

19kHz output

AF Signal

OUTPUT

L ch

R ch

REMOTE CONTROL (AMP-3)

AC IN (240V···(GN) 110/127/220/240V···(GC,PX) 50/60Hz)

AC OUTLET (SWITCHED)

FL DISPLAY

[GC]area.

[GC,PX]areas.

[GN]area.

■ SCHEMATIC DIAGRAM (Parts list on pages 19~21)

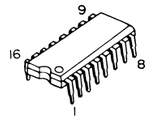
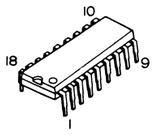
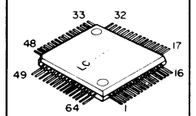
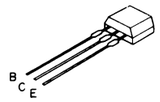
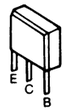
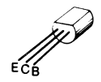
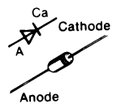
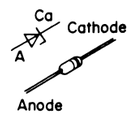
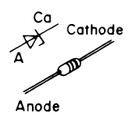
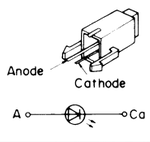
(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

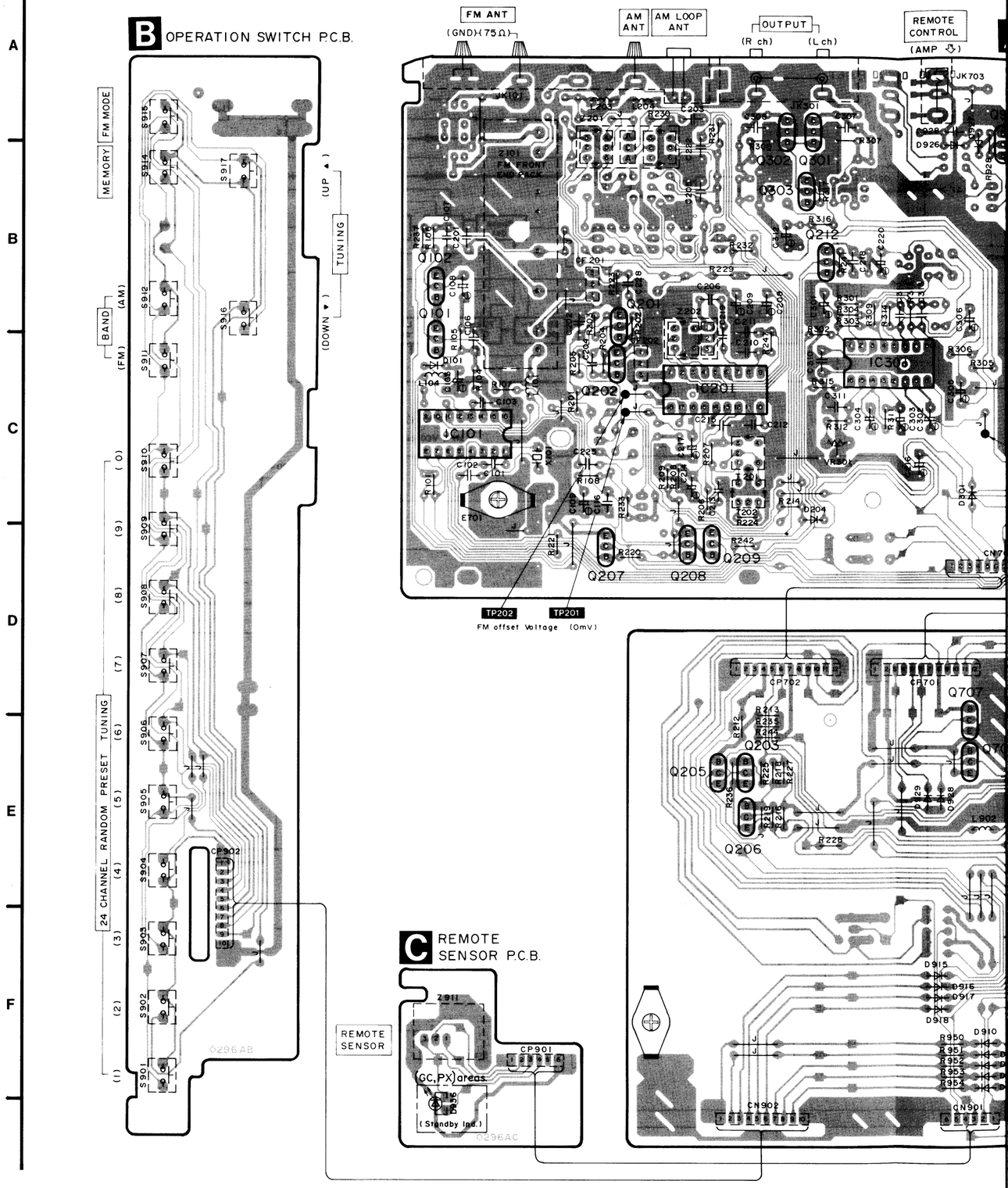
- **•S701** : Power source switch in "**on**" position.
- **•S901~910** : Preset tuning switches.
  S901: CH1, S902: CH2, S903: CH3, S904: CH4, S905: CH5, S906: CH6, S907: CH7, S908: CH8, S909: CH9, S910: CH0
- **•S911, S912** : Band selector switches.
  (S911: FM, S912: AM)
- **•S914** : Memory set switch.
- **•S915** : FM mode selector switch.
- **•S916, S917** : Tuning switches.
  (S916: down, S917: UP)
- **•SK703** : Voltage selector switch in "**240 V**" position.
  (110 V/127 V/220 V/240 V)
  For (GC), (PX) areas
- •Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the valtage volues, depending on the internal impedance of the DC circuit tester.
  ( ): AM voltage , [ ]: MUTING voltage
- ——— Positive voltage lines
- - - - Negative voltage lines
- □□□□▷ FM OSC
- ▷ FM signal
- ■■■■▶ AM OSC
- ▶ AM signal
- AF signal lines
- •Important safety notice
  Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

·Caution!
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
- ·Cover the parts boxes made of plastics with aluminum coil.
- ·Ground the soldering iron.
- ·Put a conductive mat on the work table.
- ·Do not touch the legs of IC or LSI with the fingers directly.

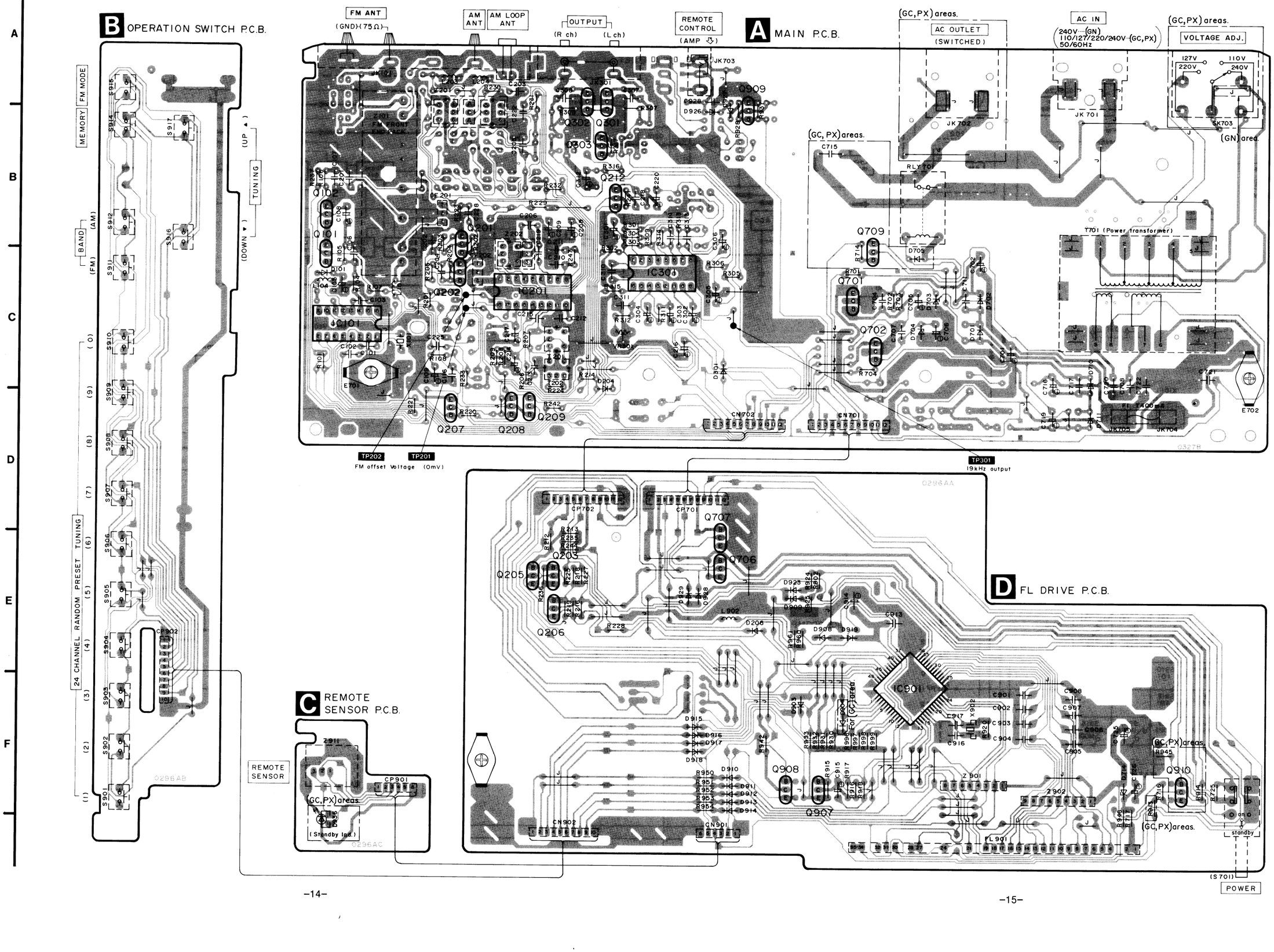
■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

LM7001 SVIUPC1161C3 	AN7273W 	LC6512A3997 	 2SA933SQRSTA 2SC1740SQSTA DTA114YSTP DAT144ESTP DTC124ESTP DTC144EKT96	2SC2787LTA 2SC3311A-Q 
2SC3940AQSTA 	1SS254TA 1SS291TA 1SR35200TB 	MA4150MTA 	MA4051MTA MA4062MTA 	LN018304P 

■ PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (Parts list on

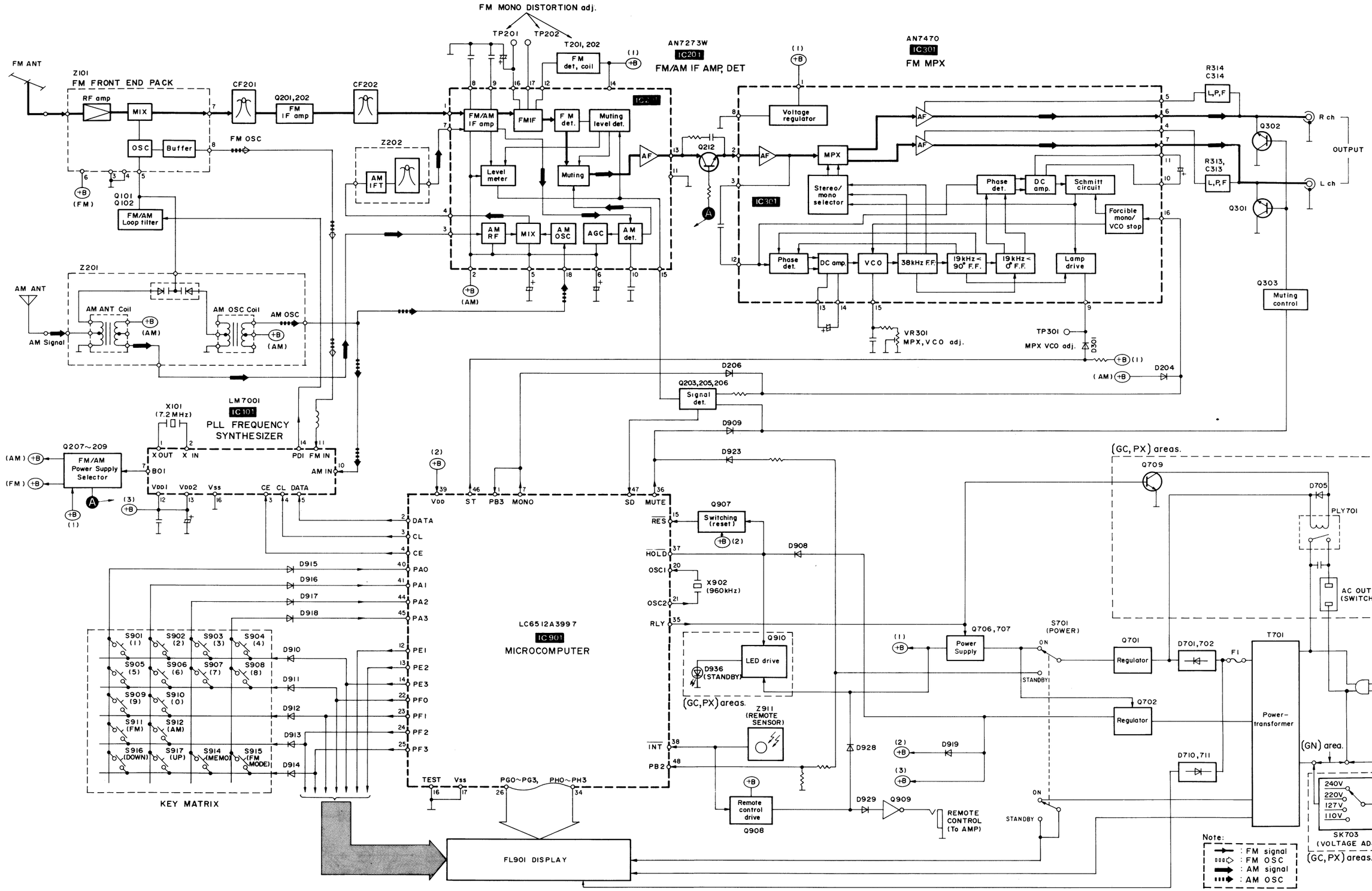


■ PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (Parts list on pages 19~21)

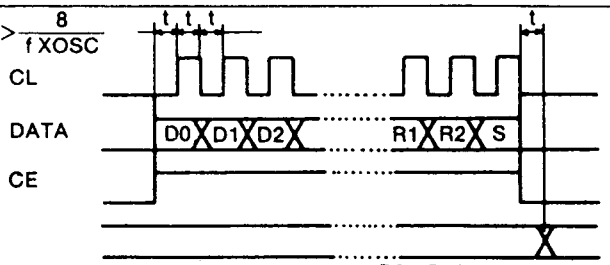


ST-K50

■ BLOCK DIAGRAM



■ FUNCTIONS OF IC TERMINALS (IC901: LC6512A3997)

<table>
<tr><th>PIN NO.</th><th>IN/OUT</th><th>MARK</th><th>DESCRIPTION OF TERMINAL</th></tr>
<tr><td>1</td><td>INPUT</td><td>PB3</td><td>Computer drive terminal.</td></tr>
<tr><td>2</td><td rowspan="3">OUTPUT</td><td>DATA</td><td rowspan="3">Data output $t > \frac{8}{f\,XOSC}$
 

f XOSC: Crystal OSC
D0~D13: Divided frequency data
R0~R2: Reference frequency data</td></tr>
<tr><td>3</td><td>CL</td></tr>
<tr><td>4</td><td>CE</td></tr>
<tr><td>5</td><td>—</td><td>PC3</td><td>Not used in this unit.</td></tr>
<tr><td>6</td><td>—</td><td>NC</td><td>Not used in this unit.</td></tr>
<tr><td>7</td><td>OUTPUT</td><td>PD0</td><td>Auto/mono changeover terminal. (auto → 0V, mono → 5V)</td></tr>
<tr><td>8</td><td>OUTPUT</td><td>PD1</td><td>Computer drive terminal.</td></tr>
<tr><td>9</td><td rowspan="3">—</td><td>PD2</td><td rowspan="3">Not used in this unit.</td></tr>
<tr><td>10</td><td>PD3</td></tr>
<tr><td>11</td><td>PE0</td></tr>
<tr><td>12
∫
14
•
22
∫
25</td><td>OUTPUT</td><td>PE1
∫
PE3
•
PF0
∫
PF3</td><td>Digital signal terminal for display.
Terminal for key return signal to external key matrix.</td></tr>
<tr><td>15</td><td>INPUT</td><td>$\overline{RES}$</td><td>Reset terminal.</td></tr>
<tr><td>16</td><td rowspan="2">—</td><td>TEST</td><td rowspan="2">Ground terminal.</td></tr>
<tr><td>17</td><td>V_{SS}</td></tr>
<tr><td>18</td><td rowspan="2">—</td><td rowspan="2">NC</td><td rowspan="2">Not used in this unit.</td></tr>
<tr><td>19</td></tr>
<tr><td>20</td><td>INPUT</td><td>OSC1</td><td rowspan="2">Connecting terminal for crystal oscillator.</td></tr>
<tr><td>21</td><td>OUTPUT</td><td>OSC2</td></tr>
<tr><td>26
∫
29
•
31
∫
34</td><td>OUTPUT</td><td>PG0
∫
PG3
•
PH0
∫
PH3</td><td>Segment signal terminal for display.</td></tr>
<tr><td>30</td><td>—</td><td>NC</td><td>Not used in this unit.</td></tr>
<tr><td>35</td><td>OUTPUT</td><td>P10</td><td>Control signal terminal for relay (RLY701).</td></tr>
<tr><td>36</td><td>OUTPUT</td><td>P11</td><td>Muting signal terminal. (Muting → High level)</td></tr>
<tr><td>37</td><td>INPUT</td><td>$\overline{HOLD}$</td><td>Terminal for power failure detection.</td></tr>
<tr><td>38</td><td>INPUT</td><td>$\overline{INT}$</td><td>Terminal for remote control cord.</td></tr>
<tr><td>39</td><td>INPUT</td><td>V_{DD}</td><td>Power supply terminal of device.
Voltage of 5V is supplied during operation of device.</td></tr>
<tr><td>40
41
44
45</td><td>INPUT</td><td>PA0
∫
PA3</td><td>Terminal for key return signal to external key matrix.
[KEY MATRIX]
<table>
<tr><th>Pin No.</th><th>45</th><th>44</th><th>41</th><th>40</th></tr>
<tr><td>14</td><td>CH4</td><td>CH3</td><td>CH2</td><td>CH1</td></tr>
<tr><td>22</td><td>CH8</td><td>CH7</td><td>CH6</td><td>CH5</td></tr>
<tr><td>23</td><td>—</td><td>—</td><td>CH0</td><td>CH9</td></tr>
<tr><td>24</td><td>—</td><td>—</td><td>AM</td><td>FM</td></tr>
<tr><td>25</td><td>MODE</td><td>MEMORY</td><td>UP</td><td>DOWN</td></tr>
</table></td></tr>
<tr><td>42
•
43</td><td>—</td><td>NC</td><td>Not used in this unit.</td></tr>
<tr><td>46</td><td rowspan="3">INPUT</td><td rowspan="3">PB0
∫
PB2</td><td>Stereo signal terminal.</td></tr>
<tr><td>47</td><td>SD signal terminal.</td></tr>
<tr><td>48</td><td>Tuner select terminal. (Ground connection)</td></tr>
</table>

■ REPLACEMENT PARTS LIST

Notes : * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.)
Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)	
IC101	LM7001	IC, PLL FREQUENCY	
IC201	AN7273W	IC, FM/AM IF AMP. DET	
IC301	SVIUPC1161C3	IC, FM MPX	
IC901	LC6512A3997	IC, MICROCOMPUTER	
		TRANSISTOR(S)	
Q101, 102	2SC1740SQ	TRANSISTOR	
Q201, 202	2SC2787L	TRANSISTOR	
Q203	2SC1740SQ	TRANSISTOR	
Q205	2SC1740SQ	TRANSISTOR	
Q206	DTC124EST	TRANSISTOR	
Q207	2SC1740SQ	TRANSISTOR	
Q208	2SA933SQR	TRANSISTOR	
Q209	DTA144ESTP	TRANSISTOR	
Q212	2SC1740SQ	TRANSISTOR	
Q301, 302	2SC3311A-Q	TRANSISTOR	
Q303	2SA933SQR	TRANSISTOR	
Q701	2SC3940AQSTA	TRANSISTOR	
Q702	2SC1740SQ	TRANSISTOR	
Q706	DTA114YSTP	TRANSISTOR	
Q707	DTC144EKT96	TRANSISTOR	
Q709	2SC1740SQ	TRANSISTOR	(GC, PX)
Q907	2SC1740SQ	TRANSISTOR	
Q908	DTA144ESTP	TRANSISTOR	
Q909	2SC1740SQ	TRANSISTOR	
Q910	2SA933SQR	TRANSISTOR	(GC, PX)
		DIODE(S)	
D101	1SS254TA	DIODE	
D204	1SS254TA	DIODE	
D206	1SS254TA	DIODE	
D301	1SS254TA	DIODE	
D701, 702	1SR35200TB	DIODE	⚠
D703	MA4150M	DIODE	
D704	MA4062MTA	DIODE	
D705	1SS254TA	DIODE	(GC, PX)
D710, 711	1SS254TA	DIODE	⚠
D714	MA4051MTA	DIODE	
D903	1SS254TA	DIODE	
D904	1SS254TA	DIODE	(GC)
D908-918	1SS254TA	DIODE	
D919	1SS291TA	DIODE	

Ref. No.	Part No.	Part Name & Description	Remarks
D923	1SS254TA	DIODE	
D926-929	1SS254TA	DIODE	
D936	LN018304P	LED	(GC, PX)
		VARIABLE RESISTOR(S)	
VR301	EVNDXAA00B53	MAIN VOLUME	
		COMPONENT COMBINATION(S)	
Z101	RAL0006	COMPONENT COMBINATION	
Z201	RLA2Z001M-T	COMPONENT COMBINATION	
Z202	RLI2Z003M-T	COMPONENT COMBINATION	
Z901	EXBF8E104J	COMPONENT COMBINATION	
Z902	EXBF9E104J	COMPONENT COMBINATION	
Z911	HC-MD10E	COMPONENT COMBINATION	
		COIL(S)	
L101	RLQZPR47KT-Y	COIL	
L104	RLQZPR22KT-Y	COIL	
L203, 204	ELEPKR68MA	COIL	
L902	RLQZP101KT-Y	COIL	
		TRANSFORMER(S)	
T201	RLI4B002M-Z	TRANSFORMER	
T202	RLI4B003M-Z	TRANSFORMER	
T701	RTP1K4E012	POWER TRANSFORMER	⚠(GC, PX)
T701	RTP1K4E011	POWER TRANSFORMER	⚠(GN)
		FILTER(S)	
CF201, 202	RLFFETWNA01L	CERAMIC FILTER	
		OSCILLATOR(S)	
X101	SVQ49U722-S	OSCILLATOR	
X902	EF0A960K04A	OSCILLATOR	
		DISPLAY TUBE	
FL901	SAD8MT10ZYK	DISPLAY TUBE	
		SWITCH(ES)	
S701	RSP3B001-J	SW, POWER	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
S901-912	EVQ21405R	SW, CH1-0/BAND	
S914-917	EVQ21405R	SW, MODE/TUNING	
SK703	SSR187-1	SW, VOLTAGE SELECTOR	⚠(GC, PX)
		JACK(S)	
JK101	RJH4405-1	ANTENA TERMINAL	
JK301	RJH3201N	OUTPUT TERMINAL	
JK701	SJS9236	AC INLET	⚠(GC, PX)
JK701	SJSD16	AC INLET	⚠(GN)
JK702	SJS9331B	AC OUTLET	⚠(GC, PX)
JK703	RJJ33TR01	REMOTE OUT	
JK704, 705	EYF52BC	FUSE HOLDER	⚠
CN701, 702	RJU005W012	SOCKET(12P)	
CN901	RJU003K006M1	SOCKET(6P)	
CN902	RJU003K010M1	SOCKET(10P)	
CP701, 702	RJT005W012	CONNECTOR(12P)	
CP901	RJT003K006M1	CONNECTOR(6P)	
CP902	RJT003K010M1	CONNECTOR(10P)	
		RELAY	
RLY701	RSY0003M	RELAY	⚠
		FUSE(S)	
F1	XBA2C04TB0	FUSE 250V 0.4A	⚠

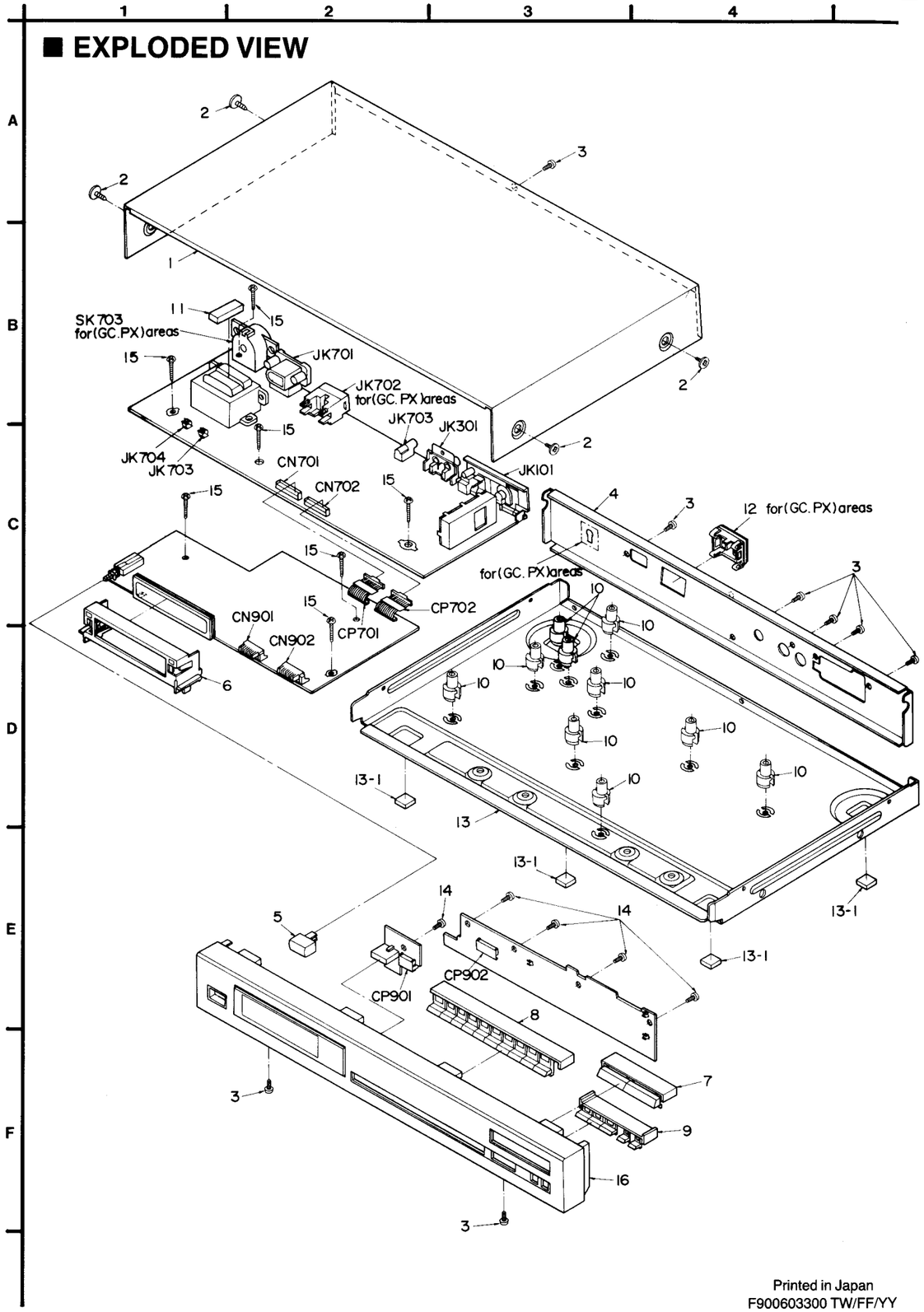
Notes : * Capacity valuse are in microfarads (uF) unless specified otherwise, P=Pico-farads(pF) F=Farads(F)
* Resistance values are in ohms, unless specified otherwise, 1K=1,000(OHM) , 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
		RESISTORS
R101	ERDS2TJ103	1/4W 10K
R104	ERDS2TJ102	1/4W 1K
R105	ERDS2TJ561	1/4W 560
R106	ERDS2TJ562	1/4W 5.6K
R107	ERDS2TJ103	1/4W 10K
R108	ERDS2TJ151	1/4W 150
R201	ERDS2TJ152	1/4W 1.5K
R202	ERDS2TJ824	1/4W 820K
R203	ERDS2TJ331	1/4W 330
R204	ERDS2TJ474	1/4W 470K
R205	ERDS2TJ331	1/4W 330
R206	ERDS2TJ561	1/4W 560
R207	ERDS2TJ822	1/4W 8.2K
R208	ERDS2TJ102	1/4W 1K
R209	ERDS2TJ471	1/4W 470
R212	ERDS2TJ153	1/4W 15K
R213	ERDS2TJ104	1/4W 100K
R214	ERDS2TJ824	1/4W 820K
R216	ERDS2TJ563	1/4W 56K
R218	ERDS2TJ563	1/4W 56K
R219	ERDS2TJ223	1/4W 22K
R220	ERDS2TJ103	1/4W 10K
R221	ERDS2TJ104	1/4W 100K
R223	ERDS2TJ471	1/4W 470
R224	ERDS2TJ182	1/4W 1.8K
R225	ERDS2TJ104	1/4W 100K
R227	ERDS2TJ104	1/4W 100K
R228	ERDS2TJ123	1/4W 12K
R229	ERDS2TJ102	1/4W 1K
R230	ERDS2TJ104	1/4W 100K
R231	ERDS2TJ152	1/4W 1.5K
R232	ERDS2TJ122	1/4W 1.2K
R233	ERDS2TJ102	1/4W 1K
R235	ERDS2TJ471	1/4W 470
R236	ERDS2TJ333	1/4W 33K
R237	ERDS2TJ151	1/4W 150
R241	ERDS2TJ100	1/4W 10
R242	ERDS2TJ224T	1/4W 220K
R244	ERDS2TJ822	1/4W 8.2K
R247	ERDS2TJ103	1/4W 10K
R301	ERDS2TJ393	1/4W 39K
R302	ERDS2TJ151	1/4W 150
R303, 304	ERDS2TJ223	1/4W 22K
R305, 306	ERDS2TJ272T	1/4W 2.7K (GC, PX)
R305, 306	ERDS2TJ332T	1/4W 3.3K (GN)
R307, 308	ERDS2TJ104	1/4W 100K
R309	ERDS2TJ394	1/4W 390K
R311	ERDS2TJ102	1/4W 1K
R312	ERDS2TJ153	1/4W 15K
R313, 314	ERDS2TJ473	1/4W 47K
R315	ERDS2TJ103	1/4W 10K
R316	ERDS2TJ102	1/4W 1K
R317	ERDS2TJ473	1/4W 47K
R701	ERDS1FJ270	1/2W 27 ⚠
R702	ERDS2TJ102	1/4W 1K
R703	ERDS2TJ221	1/4W 220
R704	ERDS2TJ222	1/4W 2.2K
R714	ERDS2TJ562	1/4W 5.6K (GC, PX)
R716, 717	ERDS2TJ101	1/4W 100
R725	ERDS2TJ103	1/4W 10K
R902	ERDS2TJ104	1/4W 100K
R913	ERDS2TJ331	1/4W 330 (GC, PX)
R914	ERDS2TJ473	1/4W 47K (GC, PX)
R915	ERDS2TJ821	1/4W 820
R916	ERDS2TJ272T	1/4W 2.7K
R917	ERDS2TJ103	1/4W 10K
R918	ERDS2TJ224T	1/4W 220K
R920	ERDS2TJ105T	1/4W 1M
R924	ERDS2TJ392T	1/4W 3.9K
R925	ERDS2TJ473	1/4W 47K
R928	ERDS2TJ102	1/4W 1K
R930-933	ERDS2TJ104	1/4W 100K
R937	ERDS2TJ104	1/4W 100K
R942	ERDS2TJ103	1/4W 10K
R945	ERDS2TJ473	1/4W 47K (GC, PX)
R946	ERDS2TJ101	1/4W 100
R950-954	ERDS2TJ683	1/4W 68K
R960	ERDS2TJ103	1/4W 10K
R961	ERDS2TJ273	1/4W 27K
R996-999	ERDS2TJ104	1/4W 100K
		CAPACITORS
C101, 102	ECBT1H150JC5	50V 15P
C103	ECBT1C103NS5	16V 0.01U
C105	ECEA0JU101B	6.3V 100U
C106, 107	ECKR1H103ZF5	50V 0.01U
C108	ECEA1EK4R7	25V 4.7U
C109	ECEA1CU330	16V 33U
C116	ECKR1H103ZF5	50V 0.01U
C201, 202	ECKR1H103ZF5	50V 0.01U
C203	ECBT1H8R2KC5	50V 8.2P
C204	ECBT1C103NS5	16V 0.01U
C205	ECKT1H223ZF	50V 0.022U
C206	ECBT1H150JC5	50V 15P
C208	ECEA0JU101B	6.3V 100U
C209	ECEA1EK4R7	25V 4.7U
C210, 211	ECFR1E103KR	25V 0.01U
C212	ECBT1E223ZF	25V 0.022U
C213	ECBT1H101KB5	50V 100P
C214	ECEA1CK100B	16V 10U
C215	ECBT1C103NS5	16V 0.01U
C216	ECEA1CK100B	16V 10U
C217	ECEA1HK010B	50V 1U
C218	ECFR1E183KR	25V 0.018U
C219	ECBT1C103NS5	16V 0.01U
C220	ECEA1CK100B	16V 10U
C222	ECFR1E473KR	25V 0.047U
C225	ECBT1H101KB5	50V 100P
C228	ECBT1H102KB5	50V 1000P
C301	ECEA1CU470	16V 47U
C302	ECEA1HKR47	50V 0.47U
C303	ECEA1HK010B	50V 1U
C304-306	ECEA1VK3R3	35V 3.3U
C307, 308	ECFR1E223KR	25V 0.022U (GC, PX)
C307, 308	ECFR1E153KR	25V 0.015U (GN)
C310	ECFR1E473KR	25V 0.047U
C311	ECQP1471JZ	50V 470P
C312	ECEA1CK100B	16V 10U
C313, 314	ECBT1H181KB5	50V 180P
C701, 702	ECEA1EU102B	25V 1000U
C704	ECKR1H102ZF5	50V 1000P
C705	ECEA1CU221	16V 220U
C706	ECEA1EK4R7	25V 4.7U
C707	ECKR1H102ZF5	50V 1000P
C708	ECKR1H103ZF5	50V 0.01U
C711	ECKR1H103ZF5	50V 0.01U
C715	ECKRNS103ZV	500V 0.01U ⚠(GC, PX)
C716	ECEA1VU101B	35V 100U
C717	ECKR1H103ZF5	50V 0.01U
C719	ECEA1VU101B	35V 100U
C720-722	ECKR1H103ZF5	50V 0.01U
C725	ECEA1VK100B	35V 10U
C726	ECEA1VK3R3	35V 3.3U
C901-908	ECKR1H331KB5	50V 330P
C913	ECKR1H103ZF5	50V 0.01U
C914	ECEA0JU102	6.3V 1000U
C915	ECEA1HKR22B	50V 0.22U
C916	ECBT1H101KB5	50V 100P
C917	ECBT1H121KB5	50V 120P
C928	ECBT1C392MR5	16V 3900P

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS	
1	RKM0032-K	CABINET	
2	SNE2129-1	SCREW	
3	XTBS3+8JFZ1	SCREW	
4	RGR0081C-A1	REAR PANEL	(GC, PX)
4	RGR0081B-A	REAR PANEL	(GN)
5	RGU0030	POWER BUTTON	
6	RMR0277	FL HOLDER	
7	RGU0357-K	TUNING BUTTON	
8	RGU0358-K	CHANNEL BUTTON	
9	RGU0360-K	MODE BUTTON	
10	SHE187-2	HOLDER	
11	RMG0145	RUBBER	
12	SJS9331A	AC OUTLET COVER	(GC, PX)
13	RFKJTK50GC-K	CHASSIS ASS'Y	
13-1	SKL293	FOOT	
14	XTBS26+8J	SCREW	
15	XTB3+20JFZ	SCREW	
16	RFKGTK50GC-K	FRONT PANEL	(GC, PX)
16	RFKGTK50GN-K	FRONT PANEL	(GN)
		PACKING MATELIALS	
P1	RPG0441	CARTON BOX	(GC, GN)
P1	RPG0442	CARTON BOX	(PX)
P2	RPN0325	PAD	
P3	SPSD152	ACCESSORIES BOX	
P4	XZB52X60A01Z	PROTECTION COVER	

Ref. No.	Part No.	Part Name & Description	Remarks
		ACCESSORIES	
A1	RQT0683-G	INSTRUCTIONS MANUAL	(GC)
A1	RQT0684-L	INSTRUCTIONS MANUAL	(GN)
A1	RQT0729-M	INSTRUCTIONS MANUAL ASS'Y	(PX)
A2	SQX7186	WARRANTY CARD	(GN)
A2	SQX7071-1	WARRANTY CARD	(PX)
A3	RQCB0169	SERVICENTOR LIST	(GC, GN)
A4	RJA0004	AC CORD	⚠(GC, PX)
A4	SJA173	AC CORD	⚠(GN)
A5	SJP2249-3	PIN CORD	
A6	SPB1163T	AM ANTENNA ASS'Y	
A6-1	SMA233-1M	HOLDER	
A6-2	XTN3+10AFZ	SCREW	
A7	SSA272M	FM ANTENNA	
A8	SJP9215	AC ATTACHMENT PLUG	⚠(GC, PX)
A9	EUR64746	REMOTE CONTROLLER	(GC, PX)
A9	EUR64747	REMOTE CONTROLLER	(GN)
A9-1	UR64EC366	BATTERY COVER	
A10	R03	BATTERY	

■ EXPLODED VIEW



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